

*AMENDMENTS TO THE ABSTRACT*

Replace the Abstract with:

~~[DOCUMENT]~~

ABSTRACT

An optical encoder includes: ~~a~~ an incoherent light source; a first grating, which is ~~composed of~~ an amplitude grating having a first grating period ~~P1~~, for spatial amplitude modulation of the incoherent light from the light source; a second grating, which is ~~composed of~~ a phase grating having a second grating period ~~P2~~, for spatial phase modulation of light from the first grating; a third grating, which is ~~composed of~~ an amplitude grating having a third grating period ~~P3~~, for spatial amplitude modulation of light from the second grating; and a light ~~receiving~~ detecting element for ~~receiving detecting light of from~~ the third grating, wherein the. The encoder detects ~~a~~ relative displacement between the respective gratings, ~~thereby enhancing~~ OTF. The optical transfer function from the light source to the light ~~receiving~~ detecting element is enhanced, and ~~greatly improving the efficiency of in~~ utilizing light is improved.